Please add new claims 21-35 as follows:

21.(NEW) A method for enhancing *in vivo* survival of parenchymal cells in an implanted scaffold comprising:

a. implanting into the body of a patient a porous three-dimensional scaffold comprising a material selected from the group consisting of ethylene vinyl acetate, polyvinyl alcohol, derivatives of polyvinyl alcohol, teflon, and nylon and having generally interconnected pores of between approximately 100 and 300 microns in diameter throughout the scaffold,

wherein the pores of the scaffold provide sufficient surface area to the scaffold to permit attachment of an amount of the cells effective to produce functional vascularized organ tissue *in vivo*, and

wherein the scaffold is resistant to compression within the patient, thereby maintaining the pore size of the scaffold to between approximately 100 and 300 microns, and the structure of the scaffold allows the introduction of cells into the vascularized scaffold without damage to the cells or patient;

b. maintaining the scaffold in the patient until the scaffold is between 10% and 90% vascularized and infiltrated with viable connective tissue; and

c. introducing viable parenchymal cells into the vascularized scaffold, wherein survival of the parenchymal cells in the vascularized scaffold is enhanced relative to survival of parenchymal cells in an unvascularized scaffold.

22.(NEW) The method of claim 21, wherein said scaffold has a sponge or foam structure.

23.(NEW) The method of claim 21, wherein the cells are introduced into the scaffold by means of a catheter.

24.(NEW) The method of claim 21, wherein the scaffold is implanted in a tissue which is selected from the group consisting of the mesentery, subcutaneous tissue, subfascia, and supraperitoneal tissue.

25.(NEW) The method of claim 21, further comprising performing a portacaval shunt on the patient.

26.(NEW) The method of claim 21, further comprising providing in the material forming the scaffold compounds selected from the group consisting of growth factors, compounds stimulating angiogenesis, and immunomodulators.

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27.(NEW) The method of claim 21, wherein the scaffold contains distribution channels for introduction of the cells.

28.(NEW) The method of claim 21, further comprising providing with the scaffold means for introduction of the cells.

29.(NEW) The method of claim 21, wherein the cells are hepatocytes.

30.(NEW) The method of claim 21, further comprising selecting the cells from the group consisting of parathyroid cells, thyroid cells, cells of the adrenal-hypothalamic-pituitary axis, nerve cells, bone-forming cells, cells forming smooth muscle and cells forming skeletal muscle.

31.(NEW) The method of claim 21, wherein the rate of survival of parenchymal cells is at least 40% after 24 hours.

32.(NEW) The method of claim 21, wherein the rate of survival of parenchymal cells is in the range of 60-70% after 24 hours.

33.(NEW) The method of claim 21, wherein the rate of survival of parenchymal cells is at least 25% after one week.

34.(NEW) A method for producing a functional vascularized organ tissue in vivo comprising:

a. implanting into the body of a patient a porous three-dimensional scaffold comprising a material selected from the group consisting of ethylene vinyl acetate, polyvinyl alcohol, derivatives of polyvinyl alcohol, teflon, and nylon and having generally interconnected pores of between approximately 100 and 300 microns in diameter throughout the scaffold,

wherein the pores of the scaffold provide sufficient surface area to the scaffold to permit attachment of an amount of the cells effective to produce functional vascularized organ tissue in vivo, and

wherein the scaffold is resistant to compression within the patient, thereby maintaining the pore size of the scaffold to between approximately 100 and 300 microns, and the structure of the scaffold allows the introduction of cells into the vascularized scaffold without damage to the cells or patient;

b. maintaining the scaffold in the patient until the scaffold is between 10% and 90% vascularized and infiltrated with viable connective tissue; and

c. introducing viable hepatocytes into the vascularized scaffold.

35.(NEW) The method of claim 34, wherein said scaffold has a sponge or foam structure.